INTRODUCTORY COMMENTS

Sir:

Prior to examining the above-referenced application, kindly amend the application as follows.

Amendments to the specification begin on page 2.

Amendments to the claims begin on page 3.

Remarks accompanying the amendments begin on page 8.

AMENDMENTS TO THE SPECIFICATION

Kindly change the title of the invention to read:

--LINEAR ELECTRIC ENCODER WITH FACING TRANSMITTER AND RECEIVER--

On page 1, line 2, after the title and before "Field of the Invention," kindly add the following:

-- CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a division of U.S. Patent Application 10/282,890, filed October 29, 2002, which is a division of U.S. Patent Application 09/294,749, filed April 19, 1999, now U.S. Patent 6,492,911. --

AMENDMENTS TO THE CLAIMS

1-81. (Canceled)

82. (New) A linear displacement encoder, for sensing the position of a first object moving relative to a second object, comprising:

a ruler, fixed to the second object and having first and second sides;

a reading head, fixed to the first object so as to move along the ruler, and comprising an electrostatic field transmitter, which is disposed on the first side of the ruler and generates an electrostatic field, and a receiver, which is disposed on the second side of the ruler and receives the electrostatic field;

an electrically-active pattern formed on the ruler, which pattern modulates the electrostatic field received by the receiver responsively to motion of the reading head relative to the ruler; and

processing circuitry, coupled to sense the modulated electrostatic field, so as to detect the modulation and determine responsive thereto a measure of the position of the first object relative to the second object.

83. (New) The encoder according to claim 82, wherein the transmitter comprises an electrically-conductive pattern comprising multiple segments, and wherein the processing circuitry is adapted to excite the segments with multiple periodic waveforms at a common frequency but having different, predetermined phases, and comprises a synchronous detector, which is adapted to process the signals in synchronization with the common frequency in order to detect the modulation.

84. (New) The encoder according to claim 82, wherein the electrically-active pattern has a symmetry such that the modulation is substantially unaffected by tilt of the head relative to the ruler.

85. (New) The encoder according to claim 84, wherein the pattern comprises a sinusoid.

86. (New) The encoder according to claim 82, wherein the electrically-active pattern comprises a dielectric material.

87. (New) The encoder according to claim 82, wherein the electrically-active pattern comprises a conductive material.

88. (New) The encoder according to claim 87, wherein the electrically active pattern comprises multiple segments.

89. (New) The encoder according to claim 87, wherein the electrically-active pattern comprises a dielectric material.

90. (New) The encoder according to claim 82, wherein the reading head has coarse and fine reading configurations, and wherein the processing circuitry is adapted to detect the modulation of the field in the coarse reading configuration so as to determine responsively thereto a coarse measure of the position of the first object relative to the second object, and to detect the modulation of the field in the fine reading configuration so as to determine responsively thereto a fine measure of the position of the first object relative to the second object.

91. (New) The encoder according to claim 90, wherein the coarse measure comprises an absolute position measurement.

92. (New) The encoder according to claim 90, wherein the conductive plate comprises a plurality of transmitting bars, which are collectively divided into at least two groups, and wherein in the coarse configuration, the processing circuitry collectively excites the bars in each of the groups.

93. (New) The encoder according to claim 90, wherein the transmitter comprises conductive segments structured such that the coarse measure is substantially unaffected by tilt of the head relative to the ruler.

94. (New) The encoder according to claim 90, wherein the reading head has a medium reading configuration, and wherein the processing circuitry is adapted to detect the modulation of the field in the medium reading configuration so as to determine responsively thereto a medium measure of the position of the first object, intermediate the coarse and fine measures.

95. (New) The encoder according to claim 82, wherein the ruler is fixed to a curved surface of the second object, and wherein the processing circuitry is adapted to determine a measure of the position of the first object along the curved surface.

96. (New) A linear displacement encoder, for sensing the position of a first object moving relative to a second object, comprising:

a ruler, fixed to the second object and defining a slot having first and second sides, the ruler comprising an electrostatic field transmitter, which is disposed on the first side of the slot and generates an electrostatic field, and a receiver, which is disposed on the second side of the slot and receives the electrostatic field;

a reading head, fixed to the first object so as to move within the slot;

an electrically-active pattern formed on the reading head, which pattern modulates the electrostatic field received by the receiver responsively to motion of the reading head within the slot; and

processing circuitry, coupled to sense the modulated electrostatic field, so as to detect the modulation and determine responsive thereto a measure of the position of the first object relative to the second object.

97. (New) The encoder according to claim 96, wherein the transmitter comprises an electrically-conductive pattern comprising multiple segments, and wherein the processing circuitry is adapted to excite the segments with multiple periodic

waveforms at a common frequency but having different, predetermined phases, and comprises a synchronous detector, which is adapted to process the signals in synchronization with the common frequency in order to detect the modulation.

98. (New) The encoder according to claim 96, wherein the electrically-active pattern has a symmetry such that the modulation is substantially unaffected by tilt of the head relative to the ruler.

99. (New) The encoder according to claim 98, wherein the pattern comprises a sinusoid.

100. (New) The encoder according to claim 96, wherein the electrically-active pattern comprises a dielectric material.

101. (New) The encoder according to claim 96, wherein the electrically-active pattern comprises a conductive material.

102. (New) The encoder according to claim 101, wherein the electrically active pattern comprises multiple segments.

103. (New) The encoder according to claim 101, wherein the electrically-active pattern comprises a dielectric material.

104. (New) The encoder according to claim 96, wherein the ruler has coarse and fine reading configurations, and wherein the processing circuitry is adapted to detect the modulation of the field in the coarse reading configuration so as to determine responsively thereto a coarse measure of the position of the first object relative to the second object, and to detect the modulation of the field in the fine reading configuration so as to determine responsively thereto a fine measure of the position of the first object relative to the second object.

105. (New) The encoder according to claim 104, wherein the coarse measure comprises an absolute position measurement.

106. (New) The encoder according to claim 104, wherein the conductive plate comprises a plurality of transmitting bars, which are collectively divided into at least two groups, and wherein in the coarse configuration, the processing circuitry collectively excites the bars in each of the groups.

107. (New) The encoder according to claim 104, wherein the transmitter comprises conductive segments structured such that the coarse measure is substantially unaffected by tilt of the head relative to the ruler.

108. (New) The encoder according to claim 104, wherein the ruler has a medium reading configuration, and wherein the processing circuitry is adapted to detect the modulation of the field in the medium reading configuration so as to determine responsively thereto a medium measure of the position of the first object, intermediate the coarse and fine measures.

109. (New) The encoder according to claim 96, wherein the ruler is fixed to a curved surface of the second object, and wherein the processing circuitry is adapted to determine a measure of the position of the first object along the curved surface.